IN THE CLAIMS:

The text of all pending claims, (including withdrawn claims) is set forth below only for the Examiner's convenience. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with <u>underlining</u> and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

Please AMEND claims 1, 5 and 7 and CANCEL claims 2 and 8 without prejudice or disclaimer in accordance with the following:

1.   **(Currently Amended)**   A soft demodulation method, comprising:

calculating partial sums for a unit of each predetermined number of bits of a codeword received from a channel;

calculating a value of each entry of a decoding table by referring to the partial sums; and

detecting a maximum among values of all entries of the decoding table and calculating a log-likelihood ratio (LLR) using the detected maximum,~~.~~

<u>wherein the partial sums for the unit of each predetermined number of bits of the codeword is calculated by using reference entries, and each of the reference entries is comprised of a combination of some bits of each of the entries of the decoding table.</u>

2.   **(Cancelled)**

3.   **(Original):**   The soft demodulation method of claim 1, wherein the calculating the value of each entry comprises:

dividing each of the entries of the decoding table into bit units, each of the bit units comprising the predetermined number of bits; and

calculating the value of each of the entries of the decoding table by summing up the partial sums corresponding to the bit units of each of the entries of the decoding table.

4.   **(Original):**   The soft demodulation method of claim 3, wherein each of the bit units is comprised of 3 bits, 6 bits, or 9 bits.

5.   **(Currently Amended):**   The soft demodulation method of ~~claim 2~~claim 1, wherein the reference entries are "000", "001", "010", "100", and "101".

6.   **(Original):**   The soft demodulation method of claim 3, wherein, if the partial sums corresponding to the bit units of a predetermined entry of the decoding table do not exceed a predetermined threshold value, a value of the predetermined entry is not calculated.

7.   **(Currently Amended):**   A soft demodulation apparatus, comprising:
a partial sum calculator, which calculates partial sums for a unit of each predetermined number of bits of a codeword received from a channel;
an entry calculator, which calculates a value of each entry of a decoding table by referring to the partial sums;
a maximum detector, which detects a maximum among values of all calculated entries of the decoding table; and
a log-likelihood ratio (LLR) calculator, which calculates an LLR using the detected maximum~~.~~,
wherein the partial sum calculator calculates the partial sums of each predetermined number of bits of the codeword by using reference entries, and each of the reference entries comprises a combination of some bits of each of the entries of the decoding table.

8.   **(Cancelled):**

9.   **(Original):**   The soft demodulation apparatus of claim 7, wherein the entry calculator divides each of the entries of the decoding table into bit units each comprising the predetermined number of bits and sums up the partial sums corresponding to the bit units of each of the entries of the decoding table.

10.   **(Original):**   The soft demodulation apparatus of claim 7 further comprising:
a threshold value determinator, which determines whether the partial sums corresponding to the bit units of each of the entries of the decoding table exceed a predetermined threshold value,
wherein if the partial sums corresponding to bit units of a predetermined entry of the

decoding table do not exceed a predetermined threshold value, the entry calculator does not calculate a value of the predetermined entry.

11.   **(Original):**   An optical signal processing apparatus of an optical disc device, comprising:

a read/write unit to output a read code signal from an optical disc in the optical disc device;

a reference entry unit which stores a predetermined number of reference entries;

a partial sum calculator which calculates partial sums of n-bit portions of the read code signal received from the read/write unit corresponding to each stored reference entry;

a partial sum table which stores the calculated partial sums corresponding to each n-bit portion of the read code signal;

an entry calculator which calculates an entry value of each entry of a decoding table by summing the corresponding calculated partial sums stored in the partial sum table that correspond to an n-bit portion of the decoding table entry;

a maximum detector which detects a maximum calculated entry value; and

a log-likelihood ratio (LLR) calculator, which calculates an LLR using the detected maximum.

12.   **(Original):**   The apparatus of claim 11, wherein the partial sum table comprises sub tables corresponding to each n-bit portion of the read code signal.

13.   **(Original):**   The apparatus of claim 11, wherein the partial sum table comprises sub tables corresponding to each 2n-bit portion of the read code signal.

14.   **(Original):**   The apparatus of claim 11, wherein the partial sum table comprises sub tables corresponding to each 3n-bit portion of the read code signal.

15.   **(Original):**   The apparatus of claim 11, further comprising a threshold determiner to control the entry calculator to calculate the decoding table entry based on the calculated partial sums stored in the partial sum table exceeding a predetermined threshold, wherein when the calculated partial sums are below the predetermined threshold the entry

calculator does not calculate the decoding table entry.

16. **(Original):** A soft demodulation method, comprising:

storing predetermined reference entries;

calculating partial sums corresponding to n-bit portions of a read code signal based on the stored predetermined reference entries;

storing the calculated partial sums;

calculating an entry value of each entry of a decoding table by adding the stored calculated partial sums which correspond to consecutive n-bit portions of the entry of the decoding table;

detecting a maximum entry value; and

calculating a log-likelihood ratio based on the detected maximum entry value.

17. **(Original):** The method of claim 16, wherein the storing the calculated partial sums comprises storing sub tables of the calculated partial sums corresponding to each n-bit portion of the read code signal.

18. **(Original):** The method of claim 16, further comprising determining if the calculated partial sums exceed a predetermined threshold, wherein when the calculated partial sums exceed the predetermined threshold the entry value of the decoding table is calculated and when the calculated partial sums are below the predetermined threshold the entry value of the decoding table is not calculated.

19. **(Original):** A soft demodulation method, comprising:

calculating partial sums corresponding to a codeword;

calculating a predetermined entry value of a decoding table, by adding the partial sums, wherein the partial sums are abandoned when the partial sums are less likely to be detected as a maximum and the partial sums are added together to calculate the predetermined entry value when the partial sums are more likely to be detected as a maximum; and

detecting a maximum among the calculated predetermined entry values of the decoding table and calculating a log-likelihood ratio (LLR) using the detected maximum.

20.   (Original):   A soft demodulation method, comprising:

calculating an entry value of a decoding table by calculating partial sums of predetermined portions of a codeword, wherein the entry value is skipped when the partial sums are below a predetermined threshold; and

detecting a maximum of the calculated entry values of the decoding table and calculating a log-likelihood ratio (LLR) using the detected maximum.